A revision of *Micromyrtus* Benth. (Myrtaceae) in Queensland

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Summary

Bean, A.R. (1997). A revision of *Micromyrtus* Benth. (Myrtaceae) in Queensland. *Austrobaileya* 4(4): 455–476. The genus *Micromyrtus* is revised for Queensland, with the recognition of fourteen species, of which the following ten are new: *M. albicans, M. capricornia, M. carinata, M. delicata, M. forsteri, M. gracilis, M. littoralis, M. patula, M. rotundifolia* and *M. vernicosa*. All new species are endemic to Queensland. Illustrations are provided for all new taxa and for *M. leptocalyx* (F.Muell.) Benth. *M. striata* J.W.Green is newly recorded for Queensland. Descriptions and distribution maps are provided for all Queensland taxa. Informal species groups are established within *Micromyrtus*, into which the Queensland species are allocated. A key to all *Micromyrtus* species occurring in Queensland is given.

Keywords: taxonomy; Myrtaceae; *Micromyrtus*; Queensland flora; key; new species; *Micromyrtus albicans; Micromyrtus capricornia; Micromyrtus carinata; Micromyrtus delicata; Micromyrtus forsteri; Micromyrtus gracilis; Micromyrtus leptocalyx; Micromyrtus littoralis; Micromyrtus patula; Micromyrtus rotundifolia; Micromyrtus striata; Micromyrtus vernicosa.*

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Introduction

The genus *Micromyrtus* was established by Bentham (1865) to accommodate some species previously included under *Thryptomene* Endl. He distinguished his new genus from *Thryptomene* on the basis of stamen and ovule arrangement, and ovule number. Bentham (1867) listed seven species of *Micromyrtus*, including *M. leptocalyx* (F.Muell.) Benth. In distinguishing between these species, Bentham used two principal characters: ovule number, which varies from 2 to 8, and stamen number, which is 5 or 10 in pentamerous flowers, and 6 or 12 in hexamerous flowers.

Green (1983) recognised three *Micromyrtus* species for Queensland, namely *M. leptocalyx, M. sessilis* and *M. hexamera*. The present author recognises fourteen Queensland species, with most of the newly recognised species being allied to *M. leptocalyx*.

Since Bentham's time, the name *M. leptocalyx* has been broadly applied to all *Micromyrtus* specimens having flowers with 5 stamens, 6–8 ovules, and a ribbed hypanthium. This has resulted in the lumping of a broad assemblage of taxa with widely divergent habits, bark types and other morphological characteristics.

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In the current study, closer examination of *M. leptocalyx* sens. lat. has resulted in the recognition of several taxa which are not only morphologically dissimilar but have distinct climatic and habitat requirements. These taxa are named here at species level. All are endemic to Queensland.

One of the new species presented here, *M. forsteri*, is not related to the *M. leptocalyx* group but is allied to *M. fimbrisepala* J.W.Green and *M. hymenonema* (F.Muell.) C.A.Gardner, both from Western Australia.

The Queensland species of *Micromyrtus* are here arranged into three informal groups and the *M. leptocalyx* group is further divided into four subgroups.

Taxonomic characters and terminology used

The morphological characters used here to distinguish Queensland species of *Micromyrtus* are principally habit, bark type, leaf shape, entire or denticulate leaf margins, peduncle length, hypanthium features (including length, curvature, number of ribs, branching and thickness of ribs), calyx lobes (presence or absence, size, entire or fimbriate margins), petals (size, colour, margin type, presence or absence of oil glands), stamen number, style length and ovule number.

Stem flange is a term given to the tissue on the surface of the young branchlets between successive pairs of leaves. The colour, shape and gland patterns of these flanges can be diagnostic for species.

The floral disc is the fleshy area surrounding the base of the style and above the ovary. In *Micromyrtus*, the floral disc may be 'perpendicular' i.e. set at 90 degrees to a longitudinal section of the flower, or 'oblique' i.e. set at an angle less than 90 degrees to a longitudinal section (usually 60–80 degrees) and towards the subtending branchlet.

Terminology pertaining to anthers follows Green (1980a).

Taxonomy

Conspectus of informal groups within *Micromyrtus* Benth.

(1) The *M. leptocalyx* group

This group of species is characterised by its flowers which possess the same number of stamens as petals (usually 5, sometimes 6), peduncles (0.3)0.5–1.5 mm long, ovules 6–8(9), styles 0.2–0.6 mm long, and hypanthia with thin straight ribs.

Members: *M. albicans, M. capricornia, M. carinata, M. delicata, M. gracilis, M. leptocalyx, M. littoralis, M. patula, M. rotundifolia, M. vernicosa.*

(1a) The *M. delicata* subgroup

This subgroup is defined by: slender, conspicuously quadrifarious leaves 1.7–3.9 mm long and with a length:breadth ratio of 4–6:1; ovules (6)7–8(9) per flower; calyx lobes inconspicuous, 0.1–0.25 mm long; petals with oil glands.

Members: *M. delicata, M. patula.*

(1b) *M. rotundifolia* subgroup

This subgroup is defined by: leaves almost orbicular in outline, ovules 6 per flower, flowers 2.5–3.5 mm diameter; petals fimbriate and calyx lobes fimbriate; flowers either hexamerous or pentamerous.

Sole member: *M. rotundifolia.*

(1c) *M. leptocalyx* subgroup

This subgroup is defined by: bark orangy-brown ('minniritchi'); leaves 2–3.5 mm long and with a length:breadth ratio of 4–6:1; ovules 6 per flower; flowers 4.5–5 mm diameter; calyx lobes conspicuous, fimbriate; petals without oil glands.

Sole member: *M. leptocalyx.*

(1d) *M. albicans* subgroup

This subgroup is defined by: leaves medium-sized (1.1–3.0 mm long) and with a length:breadth ratio 2.3–4:1; flowers less than 3 mm diameter; ovules 6(7) per flower; calyx lobes with entire margins or absent; petals with entire margins.

Members: *M. albicans, M. capricornia, M. carinata, M. gracilis, M. littoralis, M. vernicosa.*

(2) The *M. ciliata* group

This group of species is characterised by its flowers which have 5 petals and stamens, peduncles 0–0.3 mm long; ovules 4 per flower; style 1–1.5 mm long; and hypanthium with thick curved ribs.

Members: *M. blakelyi, M. ciliata, M. sessilis, M. striata.*

(3) The *M. hymenonema* group

This group of species is characterised by its flowers which have 5(6) petals and calyx lobes; peduncles 0.5–1.2 mm long; stamens 10(12) and ovules 6–8 per flower.

Members: *M. fimbrisepala, M. forsteri, M. helmsii, M. hexamera, M. hymenonema.*

Key to Queensland species of *Micromyrtus*

1. Leaves 1–2.3 times longer than broad 2
   Leaves 2.3–6 times longer than broad 4

2. Stamens 5 or 6; corolla 2.5–3.5 mm in diameter ..... **M. rotundifolia**
   Stamens 10 or 12; corolla 4.5–6 mm in diameter 3

3. Petals 5; stamens 10 ..... **M. forsteri**
   Petals 6; stamens 12 ..... **M. hexamera**

4. Peduncles 0.3–1.5 mm long; style 0.2–0.6 mm long 5
   Peduncles 0–0.3 mm long; style 1–1.5 mm long 14

5. Calyx lobes absent 6
   Calyx lobes 0.2–0.8 mm long 7

6. Petals yellow, strongly keeled, 0.8–0.9 mm long ..... **M. carinata**
   Petals white, not or faintly keeled, 1–1.3 mm long ..... **M. gracilis**

7. Petals without oil glands 8
   Petals with oil glands on abaxial surface 9

8. Petals 2–2.5 mm long; bark loose, orangy-brown ..... **M. leptocalyx**
   Petals 1–1.25 mm long; bark tight, grey ..... **M. capricornia**

9. Leaf margins entire 10
   Leaf margins denticulate 13

10. Petals orbicular 11
    Petals elliptical, c. 1.5 times longer than wide ..... **M. vernicosa**

11. Calyx lobes 0.4–0.8 mm long ..... **M. albicans**
    Calyx lobes 0.1–0.25 mm long 2

12. Floral disc perpendicular; flowers 5- or 6-merous ..... **M. patula**
    Floral disc oblique; flowers 5-merous ..... **M. delicata**

13. Petals elliptical, c. 1.5 times longer than wide ..... **M. littoralis**
    Petals orbicular ..... **M. delicata**

14. Hypanthium 5 ribbed at base ..... **M. sessilis**
    Hypanthium 7–10 ribbed at base ..... **M. striata**

Micromyrtus delicata A.R.Bean **sp. nov.** affinis *Micromyrto patulae* sed disco floris obliquo, lobis calycis marginibus fimbriatis et ovulis plerumque 6 vel 7 in quoque flore differens. **Typus**: Queensland. Cook District: 4 km W of Herberton; 1.5 km N along powerline access road, off Herberton–Watsonville road, 17°23'S, 145°20'E, 31 January 1994, *P.I. Forster* PIF 14719 (holo: BRI (3 sheets + spirit); iso: A, AD, B, BISH, CANB, DNA, HO, K, L, MEL, NSW, P, QRS, distribuendi).

Shrub to 1 m high, branchlets not pendulous. Bark grey, persistent, closely adhering, not fibrous or flaky. Stem flanges grey or brown, flat, not winged, not warty, margins entire. Leaves imbricate, linear to narrowly obovate, 1.7–3.9 × 0.4–0.8 mm, concavo-convex, not keeled on dorsal surface, glabrous, apex acute or obtuse, margins entire or denticulate, oil glands prominent; petioles absent or up to 0.3 mm long. Flowers 2.5–3.0 mm across; peduncles 0.5–0.9 mm long, solitary, axillary; bracteoles 2, conduplicate, acute, c. 0.6 mm long, somewhat persistent. Hypanthium obconical, straight, 1–1.5 mm long; ribs 5, shallow, branching towards distal end. Calyx lobes 5, rather inconspicuous, obtuse, 0.2–0.25 × 0.5–0.6 mm, translucent, with margins fimbriate. Petals 5, obovate or elliptical, 0.9–1.2 × 0.9–1.0 mm, keeled, thick, white or yellowish near centre, margins entire, oil glands prominent on outer surface. Disc flat, perpendicular or slightly oblique. Stamens 5, antepetalous; filaments terete, 0.3–0.4 mm long; anthers versatile, bilocular; stomia linear, parallel; connective gland ovoid, about half length of anthers, with two lateral lobes. Style terete, c. 0.5 mm long, stigma capitate. Ovules 6–7, rarely 8, radially arranged around a small apical placenta. Fruits and seeds not seen. **Fig. 1 A–D.**

Additional specimens examined: **Queensland.** Cook District: Baal Gammon Mining lease, Mar 1980, *Hyland* 10352 (BRI, QRS).

Distribution and habitat: *M. delicata* is known only from the type locality west of Herberton (**Map 1**). It grows in open woodland dominated by *Eucalyptus abergiana* F.Muell. with a shrubby understorey of *Xanthorrhoea johnsonii* A.T.Lee, *Borya septentrionalis* F.Muell. and *Cryptandra* sp., in grey clayey soil. The altitude at the site is approximately 1000 metres.

Phenology: Flowers have been collected in January and March.

Affinities: *M. delicata* differs from *M. patula* by its oblique floral disc, calyx lobes with fimbriate margins, and the mostly 6–7 ovular flowers.

Conservation Status: The risk category for *Micromyrtus delicata*, according to the criteria of Chalson & Keith (1995), is 'endangered' (criteria B2, C1 and D2). The species is known from only two populations in close proximity with a total of approximately several hundred plants. It is under threat from its limited distribution, mining activities and disturbance from powerline maintenance procedures.

The recommended conservation status for this species as defined by the Queensland *Nature Conservation Act 1992* is 'endangered'.

Etymology: The specific epithet is from the Latin *delicatus*, meaning charming, in reference to the attractive foliage of the species.

Micromyrtus patula A.R.Bean **sp. nov.** affinis *Micromyrto delicatae* a qua distinguitur hypanthio recto, disco floris haud obliquo, lobis calycis marginibus integris et ovulis plerumque 8 in quoque flore. **Typus:** Queensland. Burnett District: Waaje, Barakula State Forest, NNW of Chinchilla, 26°09'S, 150°20'E, 19 March 1994, *A.R.Bean* 7563 (holo: BRI; iso: A, AD, CANB, HO, K, MEL, NSW, distribuendi).

Shrub up to 2 × 2.5 m, branchlets spreading, not pendulous. Bark grey, loose and fibrous at base of large plants, otherwise closely adhering, with shallow longitudinal fissures. Stem flanges grey, convex, not winged, not warty, margins entire. Leaves imbricate, linear to oblanceolate, 2.0–2.8 × 0.5–0.8 mm, concavo-convex, dorsal surface not keeled, glabrous; oil glands prominent; apex acute, margins entire; petioles absent. Flowers pentamerous, rarely hexamerous, 2.2–2.6 mm across, solitary, axillary, with peduncles 0.5–0.7 mm long; bracteoles 2, conduplicate, membranous, acute, 0.5–0.9 mm long, deciduous or persistent. Hypanthium obconical, straight, 1.2–1.5 mm long, c. 1 mm across at distal end; ribs 5, branching towards calyx lobes. Calyx lobes 5(6), inconspicuous, obtuse, 0.1–0.2 × 0.5–0.6 mm, transparent, margins entire. Petals 5(6), orbicular, c. 1 × 1 mm, keeled, white, oil glands prominent on outer surface; margins entire. Disc flat or convex, perpendicular. Stamens 5(6), antepetalous; filaments terete, 0.3–0.5 mm long; anthers versatile, bilocular, stomia linear, parallel; connective gland ovoid, almost as long as anthers, with two lateral lobes. Style terete, c. 0.3 mm long, stigma capitate. Ovules 7–9, usually 8, radially arranged around a small apical placenta. Fruits and seeds not seen. **Fig. 1 E–H.**

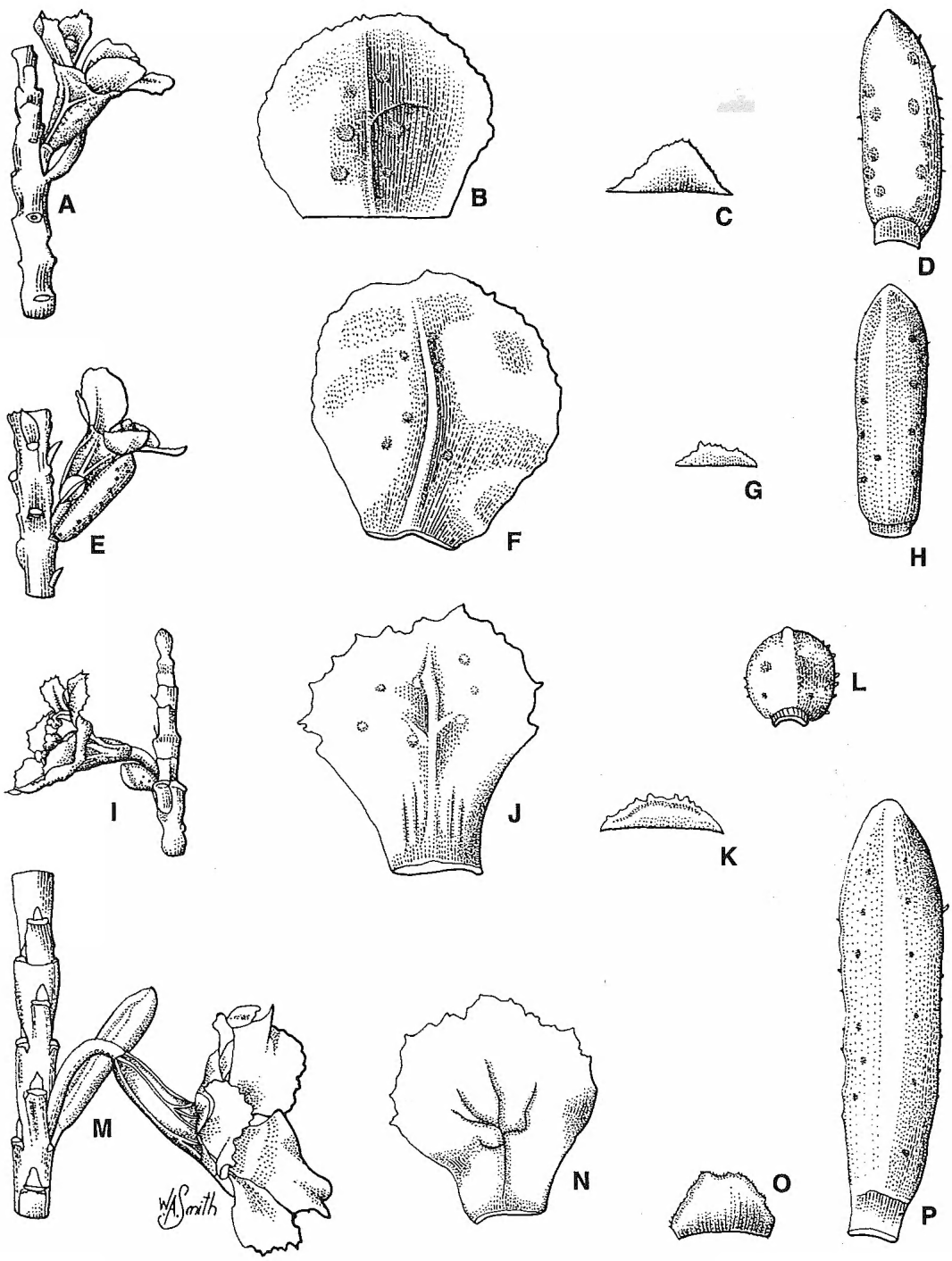


Fig. 1. A–D: *Micromyrtus delicata*. A. flower × 8. B. abaxial surface of petal × 32. C. hypanthium lobe × 32. D. abaxial surface of leaf × 16. E–H: *M. patula*. E. flower × 8. F. abaxial surface of petal × 32. G. hypanthium lobe × 32. H. abaxial surface of leaf × 16. I–L: *M. rotundifolia*. I. flower × 8. J. abaxial surface of petal × 32. K. hypanthium lobe × 32. L. abaxial surface of leaf × 16. M–P: *M. leptocalyx*. M. flower × 8. N. abaxial surface of petal × 16. O. hypanthium lobe × 16. P. abaxial surface of leaf × 16. A–D, Forster 14719; E–H, Bean 7563; I–L, Bean 7495 & Forster; M–P, Bean 2219.

Specimens examined: **Queensland.** BURNETT DISTRICT: Barakula State Forest Waaje (near Quandong), Sep 1980, *Byrnes* 3952 (BRI, K, MO, PERTH); Waaje, Sep 1994, *Hando* s.n. (BRI).

Distribution and habitat: *M. patula* is known only from the type locality in the Barakula State Forest (**Map 2**) where it grows in heathland on an almost flat rocky platform of laterised sandstone, on skeletal soil. It is associated with stunted specimens of *Eucalyptus exserta* F.Muell. and *E. tenuipes* (Maiden & Blakely) Blakely & C.T.White, as well as *Babingtonia jucunda* (S.T.Blake) A.R.Bean, *Acacia julifera* Benth. subsp. *julifera*, *Keraudrenia corollata* (Steetz) Druce and *Melaleuca thymifolia* Sm.

Phenology: Flowers have been collected in March and September.

Affinities: *M. patula* is closely related to *M. delicata*, but differs from that by its straight hypanthium, perpendicular floral disc, calyx lobes with entire margins and its mostly 8-ovular flowers. *M. patula* is the only species of the *M. leptocalyx* group which has 8 ovules per flower in the majority of flowers.

Note: This species was first collected by Mrs Val Hando of Chinchilla in 1973, then again in 1978. These specimens were sent to BRI, but were not retained. Hando (1988: 141) gives a brief description of *M. patula* as '*Micromyrtus* sp.'.

Conservation status: The risk category for *Micromyrtus patula*, according to the criteria of Chalson & Keith (1995) is 'critical' (criteria B2, B5, C1 and D2). At the type locality, there are about 200 plants of reproductive age covering an area of about 0.5 hectares. It seems unlikely that sizeable populations will be found elsewhere, as the habitat is very specialised. The species is under threat from roadworks and changing fire regimes.

The recommended conservation status for this species as defined by the Queensland *Nature Conservation Act 1992* is 'endangered'.

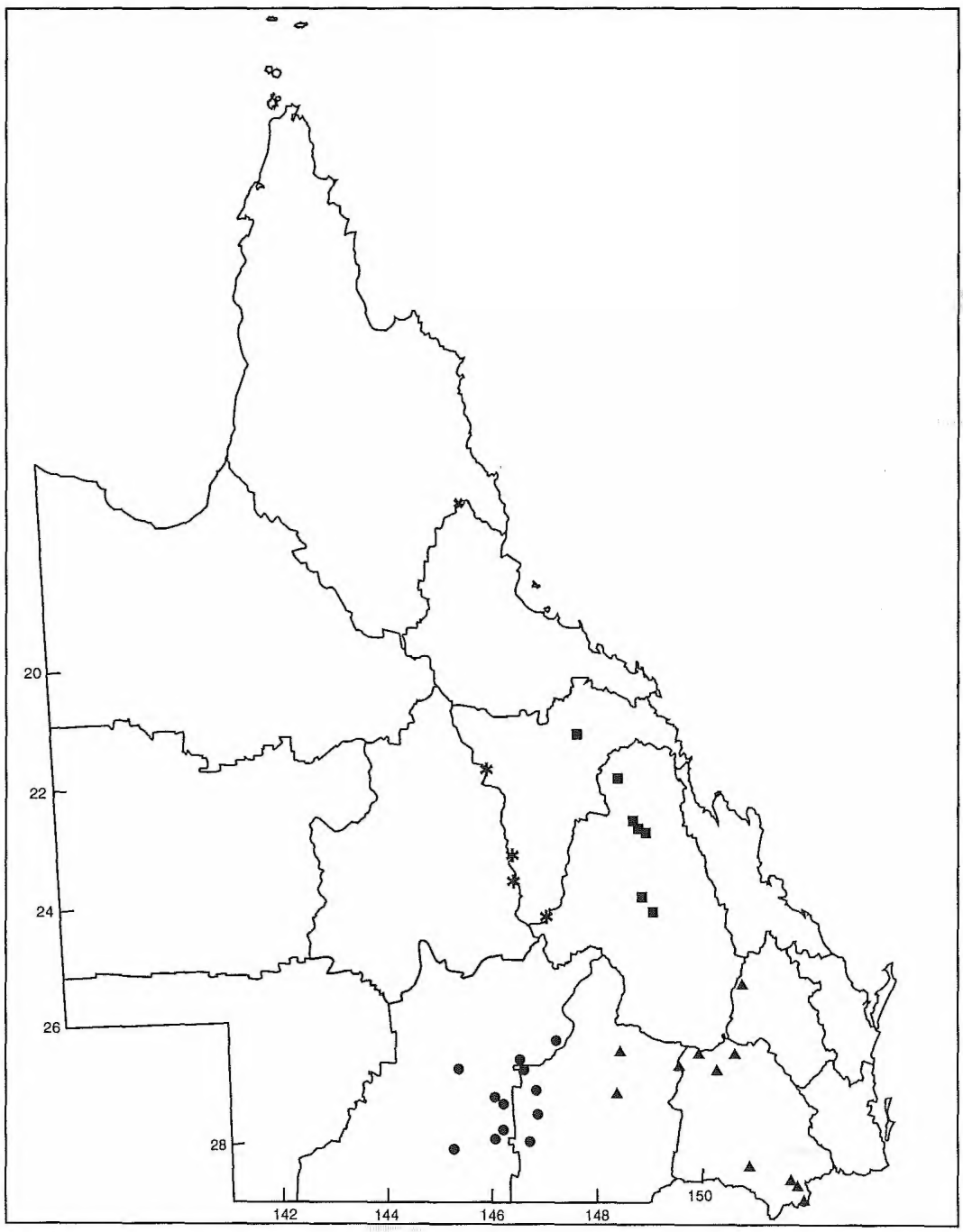
Etymology: The specific epithet is from the Latin *patulus*, meaning 'open' or 'wide', given in reference to the spreading habit of the species.

Micromyrtus rotundifolia A.R.Bean **sp. nov.** affinis *Micromyrto leptocalyci* sed differens cortice squamato griseo, foliis fere orbicularibus, floribus saepe hexameris, hypanthio breviore et petalis carinatis minoribus. **Typus:** Queensland. SOUTH KENNEDY DISTRICT: 14 km SW of 'Bowie', near Lake Buchanan, 21°54'S, 145°50'E, 27 February 1994, *A.R.Bean* 7495 & *P.I.Forster* (holo: BRI; iso: CANB, DNA, HO, K, L, MEL, NSW, PERTH, distribuendi).

Shrub 0.4–2.5 m high, branchlets not pendulous. Bark grey, loose and fibrous at base of large plants; otherwise closely adhering, with shallow longitudinal fissures. Stem flanges grey, convex, not winged, not warty, margins entire. Leaves not imbricate, more or less orbicular, 0.9–1.2 × 0.7–1.0 mm, concavo-convex or plano-convex, not keeled on dorsal surface, glabrous, oil glands few per leaf; apex obtuse; margins entire or rarely denticulate; petioles absent. Flowers 2.5–3.5 mm across, solitary, axillary, with peduncles 0.5–1.5 mm long; bracteoles 2, conduplicate, 0.5–0.9 mm long, membranous, deciduous. Hypanthium not compressed, obconical, 1–1.5 mm long, curved; ribs 5–6 in proximal half, often dividing at distal end. Calyx lobes 5–6, semiorbicular, 0.3 × 0.5–0.6 mm, transparent, margins entire or slightly fimbriate. Petals 5–6, obovate to orbicular, 1.0–1.5 × 1.0–1.5 mm, keeled, white, oil glands present or absent; margins conspicuously fimbriate. Disc flat, slightly oblique. Stamens 5–6, antepetalous; filaments terete, 0.6–0.8 mm long; anthers versatile, bilocular, stomia linear, parallel; connective gland small, brown, < half length of anther, with two lateral lobes. Style 0.4–0.5 mm long, terete; stigma capitate. Ovules 6, radially arranged around a small apical placenta. Fruits and seeds not seen. **Fig. 1 I–L.**

Specimens examined: **Queensland.** SOUTH KENNEDY DISTRICT: 8.5 km N of 'Kyong' HS, Apr 1992, *Thompson* BUC154 & *Simon* (BRI, NSW); 39 km NNE of Jericho, Jul 1993, *Thompson* JER81 & *Figg* (BRI); 23 km SE of Jericho, Jul 1993, *Thompson* JER82 & *Figg* (BRI); Alpha-'Mantuan Downs' road, 8.1 km S of 'Glen Avon', Sep 1990, *Bean* 2237 (AD, BRI). MITCHELL DISTRICT: 40 km S of Jericho, Aug 1993, *Thompson* JER80 & *Figg* (BRI).

Distribution and habitat: *M. rotundifolia* extends from near Lake Buchanan to south of



Map 1. Distribution of *Micromyrtus* spp. ■ *M. capricornia,* ✱ *M. delicata,* ● *M. hexamera,* ✱ *M. rotundifolia,* ▲ *M. sessilis.*

Alpha, a total distance of 275 km, but it is rare within its range (**Map 1**). It grows either in shrubland with *Calytrix* spp. and *Acacia julifera* subsp. *curvinervia* (Maiden) Pedley or in woodland with *Acacia catenulata* C.T.White, *Eucalyptus exserta* F.Muell. and *E. trachyphloia* F.Muell. on 'breakaways' associated with the Great Dividing Range. In both cases, the soils are shallow and sandy.

***Phenology*:** Flowers are recorded for February, August and September.

***Affinities*:** *M. rotundifolia* differs from all other species in the *M. leptocalyx* group by the following features: its leaves are only slightly longer than they are wide, both the petals and calyx lobes are fimbriate, and its flowers are frequently hexamerous.

***Conservation status*:** The risk category for *Micromyrtus rotundifolia*, according to the criteria of Chalson & Keith (1995), is 'vulnerable' (criteria B1, B2 and C1). The recommended conservation status for this species as defined by the Queensland *Nature Conservation Act 1992* is 'vulnerable'.

***Etymology*:** The specific epithet is from the Latin *rotundus*, meaning 'round', and *folium*, meaning 'leaf', and refers to the leaves which are almost circular in outline.

Micromyrtus leptocalyx (F.Muell.) Benth., Fl. Austral. 3: 65 (1867); *Baeckea leptocalyx* F.Muell., Fragm. 1: 30 (1858); *Thryptomene leptocalyx* (F.Muell.) F.Muell., Syst. census Austral. pl. 53 (1883). **Type:** Queensland. LEICHHARDT DISTRICT: near Mount Pluto, [06 October 1846], *T. Mitchell* s.n. (holo: MEL; iso: BRI).

Illustration: Williams, Native Pl. Queensl. 3: 206–7 (1987), as *Micromyrtus* sp.

Shrub to 3m high, branchlets erect or spreading. Bark orangy-brown, loose, flaky, shedding in small curved strips. Stem flanges grey, flat, not winged, not warty; margins entire. Leaves imbricate, linear, 2–3.5 × 0.5–0.6 mm, concavo-convex, distinctly keeled below, glabrous, oil glands numerous; apex obtuse; margins minutely denticulate; petioles absent or up to 0.3 mm long. Flowers axillary, solitary, 4.5–5 mm across, with peduncles 1–1.5 mm long; bracteoles 2, conduplicate, acute, to 0.7 mm long, deciduous. Hypanthium dorsiventrally compressed-obconical, 1.5–2.5 mm long, somewhat curved, ribs 5, longitudinal, irregularly spaced, often branching obtusely near distal end. Calyx lobes 5, semiorbicular, c. 0.5 × 0.8 mm, translucent, margins fimbriate. Petals 5, orbicular, 2–2.5 × 2–2.5 mm, not keeled, thin, white, oil glands not visible; margins entire or fimbriate. Disc concave, oblique. Stamens 5, antepetalous; filaments terete, c. 0.3 mm long; anthers versatile, bilocular, stomia linear, parallel; connective gland ovoid, compound, c. half length of anthers. Style terete, c. 0.25 mm long. Ovules 6, radially arranged around a small apical placenta. Fruit and seeds not seen. **Fig. 1 M–P.**

Specimens examined: **Queensland.** SOUTH KENNEDY DISTRICT: 10.5 km NE of Lennox HS, Jul 1993, *Thompson* GAL176 & *Figg* (BRI). LEICHHARDT DISTRICT: Riverside, west of Springsure, Sep 1987, *O'Keeffe* 873 (BISH, BRI, CANB, MO); Dam Gorge, Sep 1984, *O'Keeffe* 609 (BRI); Salvator Rosa NP, 170km SW of Springsure, Sep 1987, *Thomas* 237 (BRI, CANB); Carnarvon NP, Jul 1976, *Morley* s.n. (BRI); Bull Creek Gorge, Sep 1990, *Bean* 2219 (BRI). MARANOA DISTRICT: Enniskillen, Nov 1943, *White* 12381 (BRI); Chesterton Range, c. 30 km N of Mungallala, Sep 1992, *O'Malley* s.n. (BRI); Kookaburra Cave, Mt Moffatt NP, Sep 1986, *Williams* 86045 (BRI). WARREGO DISTRICT: Mt Mobil holding, 15–20 km W of Umberill HS, Nov 1990, *Grimshaw* CHR31 (BRI).

***Distribution and habitat*:** *M. leptocalyx* is confined to deeply weathered sandstone hills in the central Queensland area, particularly between Springsure and Tambo, but extends to north of Alpha and south towards the towns of Mitchell and Morven (**Map 3**). Associated species include *Eucalyptus decorticans* (F.M.Bailey) Maiden, *Acacia shirleyi* Maiden, *Leptospermum sericatum* Lindl. and *Mirbelia speciosa* DC.

***Phenology*:** Flowers have been recorded for most months, with peak flowering period around September.

***Affinities*:** *M. leptocalyx* is readily distinguished from other species in the group because of its large flower size (4.5–5.0 mm across) and relatively long leaves (2.0–3.5 mm long). Furthermore, *M. leptocalyx*, and to a lesser extent *M. vernicosa*, are the only species to possess the conspicuous and attractive orangy-brown flaky 'minniritchi' bark.

***Conservation status*:** No conservation coding is considered necessary for *M. leptocalyx*. It is well conserved in Salvator Rosa National Park, and is present in Mount Moffatt National Park and possibly elsewhere. Destruction of plants which are not on reserves is unlikely because of its rocky habitat.

Micromyrtus albicans A.R.Bean **sp. nov.** affinis *Micromyrto carinatae* a qua petalis majoribus albis ecarinatis (in illa flavis carinatisque), disco florali obliquo, bracteolis longioribus et praesentia calycis loborum differt. **Typus:** Queensland. DARLING DOWNS DISTRICT: SF 302 Barakula, north of Chinchilla, 26°12'S, 150°27'E, 24 April 1994, *P.I. Forster* PIF 15169 & *P.Machin* (holo: BRI; iso: AD, CANB, DNA, K, MEL, MO, NSW, distribuendi).

Slender shrub to 3 m high and 0.5 m wide; branchlets pendulous. Bark grey, closely adhering, with shallow longitudinal fissures. Stem flanges grey, flat, not winged, not warty; margins entire. Leaves imbricate, obovate, 1.2–2.5 × 0.6–0.9 mm, plano-convex to concavo-convex, somewhat keeled on dorsal surface, glabrous, oil glands visible; apex obtuse; margins entire; petioles absent. Flowers with peduncles 0.5–1.0 mm long, 2.5–3.0 mm across, solitary, axillary; bracteoles 2, conduplicate, acute, c. 0.9 mm long, somewhat persistent. Hypanthium strongly dorsiventrally compressed-cylindrical, 1.0–1.3 mm long on adaxial side, 1.3–1.6 mm long on abaxial side, straight; ribs 5, conspicuous, unbranched or branching obtusely near distal end. Calyx lobes 5, orbicular, semi-orbicular or oblong, 0.4–0.8 × 0.4–0.8 mm, transparent or translucent, margins entire. Petals 5, orbicular to obovate, 1.0–1.4 × 1.0–1.3 mm, not keeled, white; oil glands prominent on outer surface; margins entire. Disc concave or flat, strongly oblique. Stamens 5, antepetalous; filaments c. 0.3 mm long; anthers versatile, bilocular, stomia linear, parallel; connective gland ellipsoidal, almost as long as anthers, with globular lateral lobes. Style c. 0.25 mm long, stigma capitate. Ovules 6, radially arranged around a small apical placenta. Fruit indehiscent, not enlarged. Seeds not seen. **Fig. 2 A–D.**

***Specimens examined*: Queensland.** BURNETT DISTRICT: Waaje, north-west corner of Barakula SF, Mar 1994, *Bean* 7564 (BRI). DARLING DOWNS DISTRICT: Chinchilla-Auburn road, 28 miles [45 km] N of Chinchilla, Sep 1963, *Johnson* 2685 (BRI, NSW); 41.4 km by road NNW of Chinchilla towards Auburn, Aug 1975, *Coveny* 6818 & *Hind* (BRI, NSW); SF 302 Barakula, Apr 1994, *Forster* PIF 15165 & *Machin* (AD, BRI, DNA, K, MEL, NSW); Barakula SF, north of the Barakula Forestry Office, Mar 1994, *Bean* 7548 (BRI, MEL); north of Chinchilla, Jun 1971, *Nielsen* 4 (BRI); Barakula State Forest, NW of Chinchilla, Sep 1968, *Coaldrake* 282 (BRI, CANB, MEL, NSW); Barakula SF, Oct 1977, *Green* 4676 (BRI, NSW, PERTH); c. 4 km N of Hellhole Creek, 35 km N of Chinchilla, Feb 1979, *Sharpe* 2545 & *Simon* (BRI); Barakula SF, Aug 1971, *Nielsen* 28 (BRI); SF 302 Barakula, Mar 1993, *Richards* s.n. (BRI); Barakula Forestry, north of Chinchilla, Aug 1962, *Cockburn* s.n. (BRI); R16 Malcolm, N of Chinchilla, 1958, *Cameron* s.n. (BRI); Barakula, s.dat., *Young* s.n. (BRI); Barakula State Forest, May 1981, *Hando* 225 (BRI).

***Distribution and habitat*:** *M. albicans* is confined to the Barakula State Forest north of Chinchilla, and occurs only in the north-western quarter of that state forest (**Map 3**). It grows in woodland (rarely in heathland) in deep sandy soils. Commonly associated species include *Eucalyptus bloxsomei* Maiden, *E. crebra* F.Muell., *Callitris glaucophylla* Joy Thomps. & L.A.S.Johnson, *Acacia caroleae* Pedley and *Melaleuca decora* (Salisb.) Britten.

Phenology: Flowers and fruits have been collected throughout the year.

***Affinities*:** *M. albicans* is closely related to *M. capricornia* but differs by its longer calyx lobes and petals with conspicuous oil glands. *M. albicans* is also related to *M. carinata* but differs from that by its larger white petals without a keel, oblique floral disc, longer bracteoles and the presence of calyx lobes.

***Conservation status*:** The risk category for *Micromyrtus albicans*, according to the criteria of Chalson & Keith (1995), is 'susceptible' (criterion B). This species is confined to an area of about 25 × 40 km, where it is locally common.

The recommended conservation status for this species as defined by the Queensland *Nature Conservation Act 1992* is 'rare'.

***Etymology*:** The species epithet is from the Latin *albicans*, 'white' or 'becoming white', and refers to its white flowers, which contrast with the yellow flowers of *M. carinata*.

Micromyrtus capricornia A.R.Bean **sp. nov.** affinis *Micromyrto littorali* sed petalis orbicularibus sine glandibus oleosis, bracteolis longioribus, costis hypanthii inconspicuis, marginibus foliorum tantum raro denticulatis differens. **Typus:** Queensland. LEICHHARDT DISTRICT: Capricorn Highway, 14.2 km E of Comet, 23°36'S 148°41'S, 15 November 1993, *A.R.Bean* 6930 (holo: BRI; iso: CANB, MEL, NSW, QRS, distribuendi).

Shrub to 2.5 m high, branchlets somewhat pendulous. Bark grey, loose and fibrous at base of large plants; otherwise closely adhering, with shallow longitudinal fissures. Stem flanges grey, convex, not winged, not warty, margins entire. Leaves imbricate, narrowly obovate, 1.5–2.5 × 0.5–1.0 mm, concavo-convex or plano-convex, dorsal surface sometimes keeled near apex, glabrous, oil glands prominent; apex obtuse, margins entire or rarely denticulate; petioles 0.2–0.25 mm long. Flowers 2.3–2.8 mm across, solitary, axillary, with peduncles 0.5–1(1.5) mm long; bracteoles 2, conduplicate, translucent, acute, c. 0.8 mm long, deciduous. Hypanthium dorsiventrally compressed, obconical, slightly curved, 1.2–1.6 mm long; ribs 5, branching towards calyx lobes. Calyx lobes 5, semiorbicular or obtuse, 0.2–0.25 × 0.5–0.6 mm, transparent; margins entire. Petals 5, orbicular, 1–1.25 × 1–1.1 mm, not keeled, thin, white, oil glands not visible; margins entire or fimbriate. Disc concave, oblique. Stamens 5, antepetalous; filaments terete, c. 0.5 mm long; anthers versatile, bilocular, stomia linear, parallel; connective gland compound, ovoid, almost as long as anthers. Style c. 0.2 mm long, stigma distinctly capitate. Ovules 6–7, radially arranged around a small apical placenta. Fruit indehiscent, not enlarged. Seeds solitary, ovoid, filling the cavity. **Fig. 2 E–H.**

Specimens examined: **Queensland.** SOUTH KENNEDY DISTRICT: c. 25 km from Mt Coolon towards Collinsville, Nov 1978, *Stanley* 78370 & *Ross* (BRI); 72 km from Collinsville on Mt Coolon road, Feb 1994, *Bean* 7350 & *Forster* (A, AD, BRI, CANB, K, MEL, NSW). LEICHHARDT DISTRICT: 78 km from Nebo on Nebo-Clermont road, May 1962, *Johnson* 2372 (BRI, CANB, NSW); c. 80km NE of Emerald, 10 km SSW of 'Booroondara', Oct 1978, *Jones* 5 (BRI, CANB); 7 miles [11 km] N of Norwich Park HS, Jul 1962, *Story* & *Yapp* 177 (BRI, CANB, MEL, NSW); 'Foxleigh', 50 miles [80 km] N of Blackwater, Oct 1966, *Johnson* 2865 (BRI, CANB); Mount Flora-Dingo road, 6 km S of May Downs T/O, Jul 1992, *Bean* 4673 (BRI, K, MEL, PERTH); South Blackwater Mine, Laleham, Jan 1986, *Thompson* s.n. (BRI); Comet-Rolleston road, May 1994, *O'Keeffe* 1024 (BRI). Locality unknown: Blackwater Creek, s.dat., *Bowman* s.n. (MEL); Copperfield, 1869, *Slatter* s.n. (MEL).

Distribution and habitat: *M. capricornia* is distributed in a narrow band stretching from north-east of Mt Coolon, to north of Rolleston, a total distance of about 325 km. This band is roughly parallel to the coast and about 150km from it (**Map 1**). The species inhabits the tops of laterised ridges, on shallow to deep, yellow or red sands. It is commonly associated with *Acacia catenulata, Eucalyptus exserta, E. trachyphloia, Melaleuca tamariscina* Hook. and *Acacia shirleyi*.

Phenology: Flowers and fruits have been recorded in January, February, May, July, October and November.

Affinities: *M. capricornia* is closely related to *M. littoralis* but differs from that by its orbicular petals without oil glands, longer bracteoles, mostly entire leaf margins and inconspicuous ribbing on the hypanthium. *M. capricornia* differs from *M. vernicosa* by its curved hypanthium with branched ribs.

Conservation status: No conservation code is considered necessary. Although the species is not present in any reserve, it is relatively widespread and under no immediate threat.

Etymology: The specific epithet refers to the distribution of the species which straddles the Tropic of Capricorn.

Micromyrtus carinata A.R.Bean **sp. nov.** affinis *Micromyrto albicanti* a qua petalis flavis carinatis (in illa albis ecarinatisque), disco florali haud obliquo et absentia calycis loborum differt. **Typus:** Queensland. DARLING DOWNS DISTRICT: Gurulmundi, 26°25'S 149°58'E , 04 September 1994, *K.Sparshott* KMS310 & *P.Sparshott* (holo: BRI; iso: A, K, L, MEL, MO, NSW, distribuendi).

Slender shrub to 2.5 m high and 0.5 m wide; branchlets pendulous. Bark grey, closely adhering, with shallow longitudinal fissures. Stem flanges grey, slightly convex, not winged,

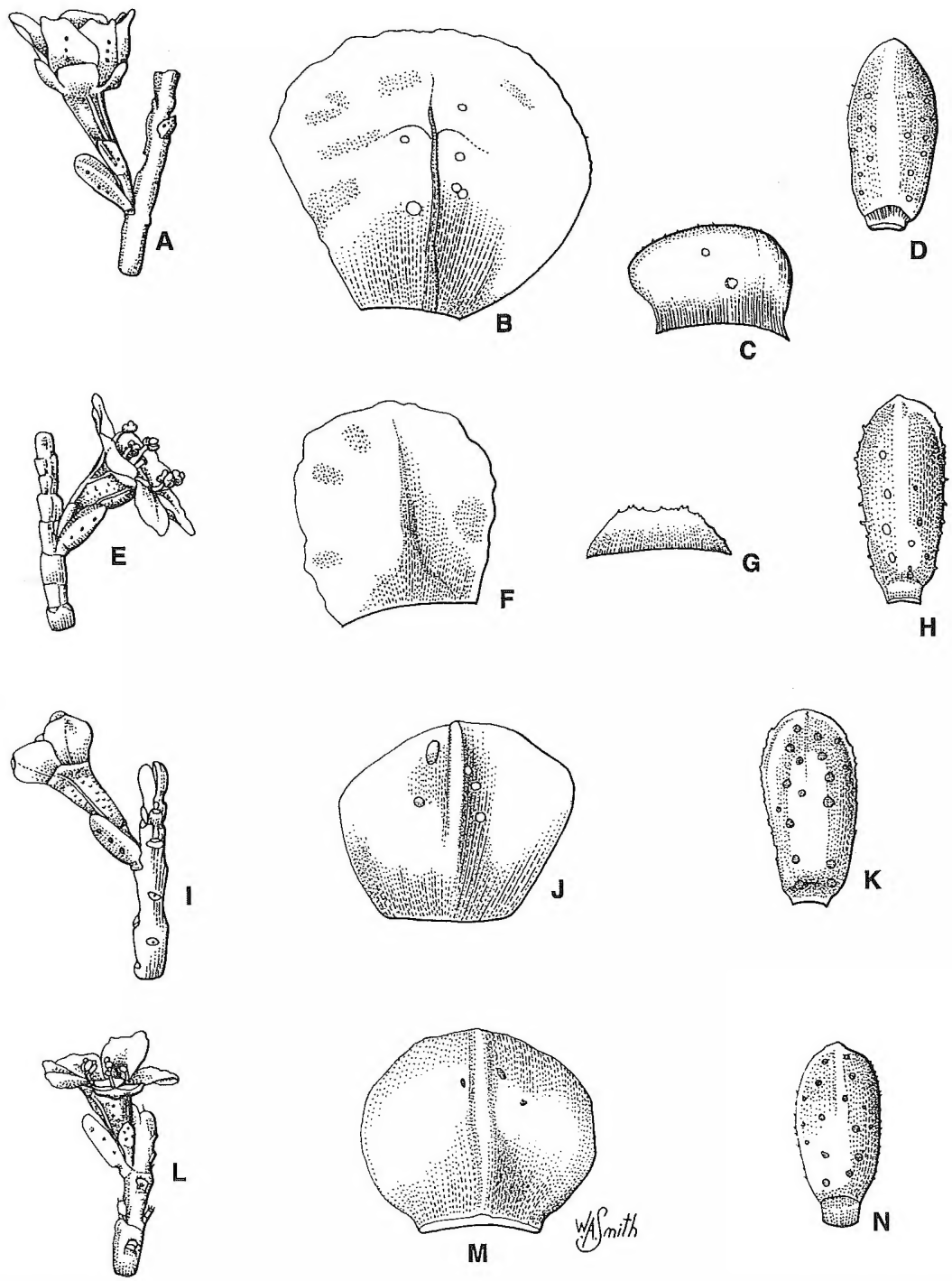


Fig. 2. A–D: *Micromyrtus albicans*. A. flower × 8. B. abaxial surface of petal × 32. C. hypanthium lobe × 32. D. abaxial surface of leaf × 16. E–H: *M. capricornia*. E. flower × 8. F. abaxial surface of petal × 32. G. hypanthium lobe × 32. H. abaxial surface of leaf × 16. I–K: *M. carinata*. I . flower × 8. J. abaxial surface of petal × 32. K. abaxial surface of leaf × 16. L–N: *M. gracilis*. L. flower × 8. M. abaxial surface of petal × 32. N. abaxial surface of leaf × 16. A–D, Forster 15165 & Machin; E–H, Bean 4673; I–K, Althofer 8426; L–N, Bean 7508.

not warty; margins entire. Leaves imbricate, obovate to oblanceolate, 1.1–1.5 × 0.5–0.7 mm, plano-convex to concavo-convex, not keeled on dorsal surface, glabrous, oil glands prominent; apex obtuse; margins entire or occasionally denticulate; petioles c. 0.25 mm long. Flowers 1.5–1.8 mm across, solitary, axillary; peduncles 0.5–1.3 mm long; bracteoles 2, conduplicate, white to pale green, acute, c. 0.5 mm long, deciduous. Hypanthium dorsiventrally compressed, obconical, straight, 0.9–1.3 mm long; ribs 5, conspicuous, branching obtusely near distal end. Calyx lobes absent. Petals 5, orbicular, 0.8–0.9 × 0.9–1.0 mm, with a prominent central longitudinal keel, thick, pale yellow, oil glands prominent on lower surface; margins entire. Disc flat, perpendicular. Stamens 5, antepetalous; filaments flattened, 0.3–0.4 mm long; connective gland compound, almost as long as anthers. Style c. 0.2 mm long, stigma capitate. Ovules 6, radially arranged around a small apical placenta. Fruit indehiscent, not enlarged. Seeds not seen. **Fig. 2 I–K.**

Specimens examined: **Queensland**. DARLING DOWNS DISTRICT: Gurulmundi-Wooleebee road, 13 km W of Gurulmundi, Oct 1975, *Williams* 75049 (BRI); Gurulmundi, Jun 1978, *Althofer* 8426 (BRI); Dividing Range, Miles, Jul 1954, *Gordon* DMG909 (BRI); Gurulmundi area, Sep 1971, *Birbeck* 50 (BRI); between Giligulgul and Gurulmundi, Sep 1959, *Henderson* s.n. (BRI); west of Gurulmundi, May 1977, *Olsen & Byrnes* 3578 (BRI); 15 km NW of Gurulmundi, Jul 1981, *Olsen* s.n. (BRI, NSW); 9km W of Gurulmundi, Oct 1977, *Green* 4674 (BRI, PERTH); c. 10 miles [16 km] W of Gurulmundi, May 1960, *Blake* 21276 (BRI, MEL, NSW); Gurulmundi, Aug 1961, *Phillips* s.n. (BRI, CANB); 6miles [10 km] W of Gurulmundi, Sep 1961, *Pedley* 868 (BRI); 17.7 km N of Gurulmundi on Mill Road, Sep 1973, *Trapnell & Williams* 302 (BRI); between Miles and Gurulmundi, Sep 1974, *Johnson* 5/74 (NSW); 14 km NW of Gurulmundi, Apr 1980, *Briggs* 466 (CANB, MEL, PERTH); 9.6 km from Gurulmundi railway siding on the Gurulmundi-Woleebee Road, Sep 1988, *Richardson* 269 & *Meredith* (CANB); Miles, Jul 1964, *Ward* s.n. (NSW). **Cultivated:** Myall Park, Glenmorgan, May 1960, *Blake* 21236 (NSW).

***Distribution and habitat*:** *M. carinata* is endemic to a small area to the north-west of Gurulmundi, on the crest of the Great Dividing Range (**Map 2**). It grows in heathland or woodland in shallow sandy soils. Associated species include *Eucalyptus tenuipes, E. trachyphloia, Acacia julifera* subsp. *julifera, Grevillea longistyla* Hook. and *Calytrix gurulmundensis* Craven.

***Phenology*:** Flowers and fruits have been collected between May and October, but it probably flowers at any time of year, in response to rain.

***Affinities*:** *M. carinata* is closely allied to *M. gracilis* and *M. albicans*. *M. carinata* differs from *M. gracilis* by its smaller flowers and the shorter hypanthium, and the thick, prominently keeled, yellow petals. *M. carinata* differs from *M. albicans* by the absence of calyx lobes, perpendicular disc, and keeled yellow petals.

***Conservation status*:** The risk category for *Micromyrtus carinata*, according to the criteria of Chalson & Keith (1995), is 'endangered' (criteria C2 and D1). *M. carinata* is confined to a very small area near Gurulmundi. This area is subject to mining activity and gravel extraction.

The recommended conservation status for this species as defined by the Queensland *Nature Conservation Act 1992* is 'endangered'.

***Etymology*:** The specific epithet is from the Latin *carinatus*, meaning 'keeled', and refers to the conspicuously keeled petals of this species.

Micromyrtus gracilis A.R.Bean **sp. nov.** affinis *Micromyrto carinatae* abqua differt hypanthio longiore, petalis albis tenuioribus leviter carinatis vel ecarinatis et diametro corollae majore. **Typus:** Queensland. DARLING DOWNS DISTRICT: 5 km W of Westmar, 27°54'S 149°46'E, 14 August 1989, *L.Pedley* 5433 (holo: BRI; iso: BISH, LAE, MO, NSW).

Slender shrub to 3 m high and 0.5 m wide, branchlets pendulous. Bark grey, loose and fibrous at base of large plants, otherwise closely adhering, with shallow longitudinal fissures. Stem flanges grey, flat, not winged, not warty, margins entire. Leaves imbricate, ovate to obovate, 1.1–1.7 × 0.6–1.0 mm, concavo-convex, somewhat keeled on dorsal surface, glabrous, oil glands prominent; apex obtuse; margins entire or denticulate; petioles absent or up to 0.6 mm long. Flowers 2.2–2.9 mm across, solitary, axillary; peduncles 0.5–1.1 mm long; bracteoles 2, conduplicate, white, acute, c. 0.6 mm long, deciduous. Hypanthium dorsiventrally

compressed, obconical, straight, 1.4–1.7 mm long; ribs 5, conspicuous, sometimes branching obtusely near distal end. Calyx lobes absent. Petals 5, elliptical or orbicular, 1.0–1.3 × 1.0–1.5 mm, with or without a faint central longitudinal keel, white, oil glands obscure or prominent on outer surface; margins entire. Disc concave or flat, perpendicular. Stamens 5, antepetalous; filaments flattened, 0.4–0.5 mm long; anthers versatile, bilocular, stomia linear, parallel; connective gland ovoid, about as long as anthers, with 2 lateral lobes. Style c. 0.2 mm long, stigma capitate. Ovules 6, radially arranged around a small apical placenta. Fruit indehiscent, not enlarged. Seeds usually solitary, broadly ovoid, filling the cavity. **Fig. 2 L–N.**

***Selected specimens*: Queensland.** SOUTH KENNEDY DISTRICT: 8 km NW of Sayah Park HS, Mar 1992, *Cumming* 11568 (BRI); 12 km SW of Mt Douglas HS, Jun 1992, *Thompson* BUC16 & *Sharpe* (BRI, CANB, NSW, PR); 53 km NNE of Jericho, Jun 1993, *Thompson* JER59 & *Figg* (BRI); 31km NE of Jericho, Jul 1993, *Thompson* JER63 & *Figg* (BRI); 37 km S of Alpha, Aug 1993, *Thompson* JER79 & *Figg* (BRI). MITCHELL DISTRICT: 22 km from Jericho, towards Blackall, Feb 1994, *Bean* 7508 & *Forster* (BRI, MEL, NSW); 14 miles [23 km] from Jericho towards Blackall, Nov 1968, *Althofer* s.n. (NSW); Joycedale, c. 14 miles [23 km] S of Jericho, Oct 1940, *Smith & Everist* 968 (BRI, CANB, MEL); 12 miles [19 km] S of Jericho, Apr 1971, *Hockings* s.n. (BRI). DARLING DOWNS DISTRICT: c. 110 km E of St George, Sep 1973, *Henderson* H1977 & *Boyland* (BRI, CANB, NSW); Moonie Hwy, c. 80 miles [129 km] ENE of St George, Sep 1959, *Everist* 6095 (BRI, MEL); 124 miles [200 km] SW of Dalby on Moonie Highway, Sep 1956, *Burbidge* 5473 (CANB); 47 miles [76 km] E of St George along Moonie Highway, Sep 1963, *Phillips* 149 (BRI, CANB); 18.2 km W of Westmar, Oct 1984, *Forster* 1914 (BRI); 17.7 km W of Westmar, Oct 1984, *Ballingall* 1736 (BRI, MEL, NSW); 2 miles [3 km] W of Westmar, Nov 1958, *Pedley* 338 (BRI); Moonie Hwy, c. 100 miles [161 km] WSW of Dalby, Sep 1963, *Everist* 7556 (BRI); 13 miles [21 km] from Westmar, along Moonie Highway, Sep 1964, *Shoobridge* s.n. (CANB); 30 miles [48 km] from Meandarra towards Westmar, Sep 1964, *Shoobridge* s.n. (BRI, CANB); 17 km W of Westmar, Sep 1988, *Richardson* 274 & *Meredith* (CANB).

***Distribution and habitat*:** *M. gracilis* has a very wide though patchy distribution extending from south of Charters Towers to Westmar, a total distance of more than 800km (**Map 2**). The best known and most collected population is that around Westmar. There is a large apparent disjunction then until the Jericho area, with northern outliers near Mt Douglas and Sayah Park. *M. gracilis* inhabits flat sites with yellow or red sandy soil, and may be associated with a wide range of shrubby genera such as *Calytrix, Prostanthera, Acacia* and *Rulingia*, and tree genera such as *Eucalyptus, Lysicarpus, Callitris* and *Casuarina*. In the north of its range, *Melaleuca* spp. and *Eucalyptus setosa* Schauer may be present.

***Phenology*:** Herbarium specimens indicate that *M. gracilis* may flower at any time of year, probably in response to rain.

***Note*:** *M. gracilis* and *M. carinata* both lack calyx lobes. This characteristic is uncommon in *Micromyrtus* and is otherwise known only in the Western Australian species *M. elobata* (F.Muell.) Benth.

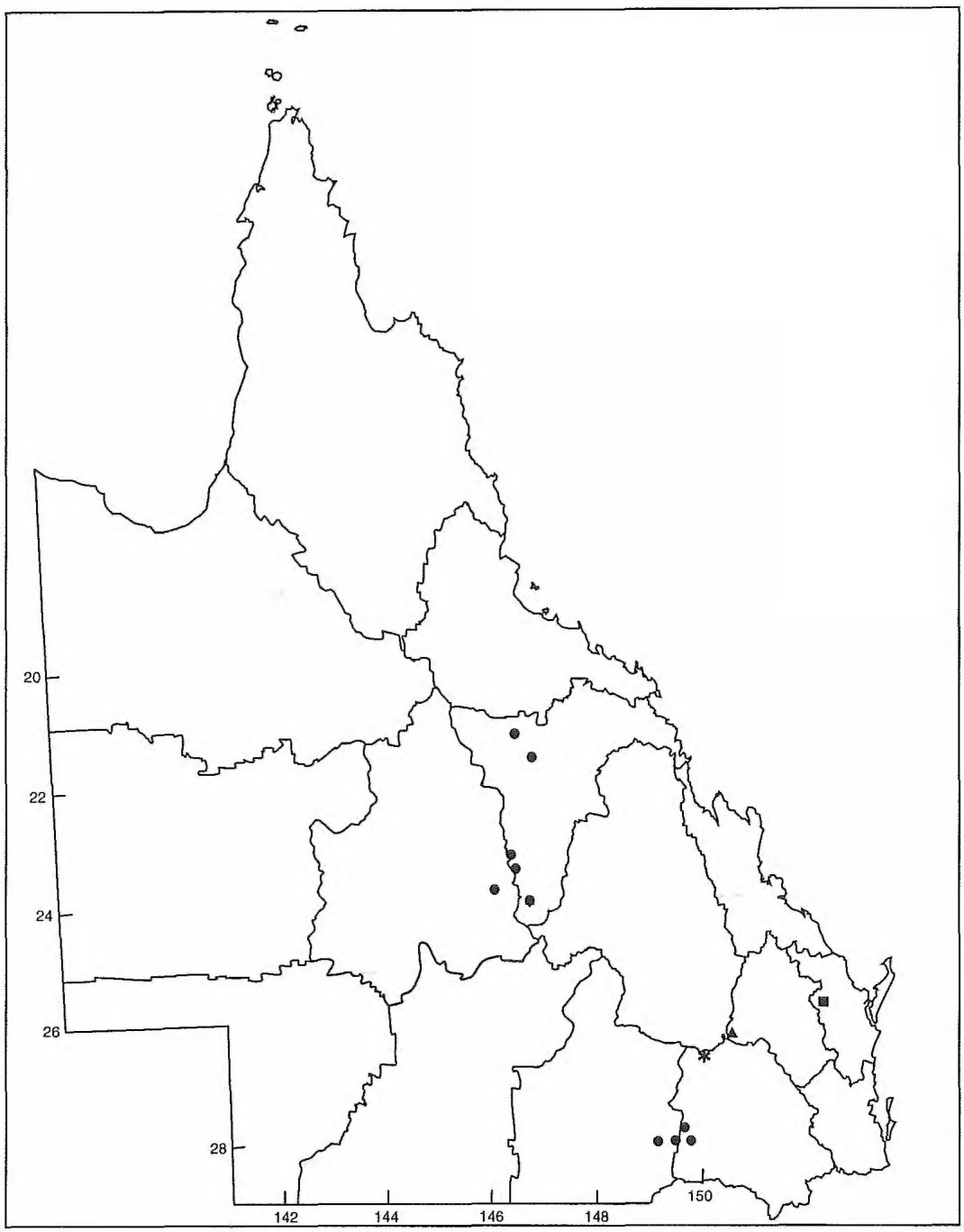
***Affinities*:** *M. gracilis* is closely related to *M. carinata* and *M. albicans*. These species are similar in habitat and habit. *M. gracilis* differs from *M.albicans* by its lack of calyx lobes and broader leaves. *M. gracilis* differs from *M. carinata* by its larger white petals which lack a conspicuous keel, and the longer hypanthia.

***Conservation status*:** No conservation coding is considered necessary for this species. While some individual populations are small, it is widely distributed, and is under no immediate threat.

***Etymology*:** The specific epithet is derived from the Latin *gracilis,* meaning 'slender', and refers to the habit of the plant.

Micromyrtus littoralis A.R.Bean **sp. nov.** affinis *Micromyrto gracili* sed petalis ellipticis, glande connectivi minore, et praesentia calycis loborum differens. **Typus:** Queensland. WIDE BAY DISTRICT: halfway between Bundaberg and Childers, 25°0–'S 152°1–'E, 26 August 1963, *S.T.Blake* 22120 (holo: BRI; iso: CANB, CHR, K).

Shrub 0.3–1.6 m high; branchlets not pendulous, except in large plants. Bark grey, closely adhering, with shallow longitudinal fissures. Stem flanges grey, slightly convex, not winged, not warty; margins entire. Leaves imbricate, ovate to lanceolate, 1.5–3 × 0.5–0.9 mm, concavo-convex, keeled on dorsal surface towards apex, glabrous, oil glands prominent; apex acute; margins denticulate; petioles absent



Map 2. Distribution of *Micromyrtus* spp. ✱ *M. carinata,* ● *M. gracilis,* ▲ *M. patula,* ■ *M. vernicosa*.

or up to 0.2 mm long. Flowers 2–2.5 mm across, solitary, axillary; peduncles 0.3–0.9 mm long; bracteoles 2, conduplicate, translucent, acute, c. 0.5 mm long, deciduous. Hypanthium dorsiventrally compressed, obconical, straight, 1.5–2.0 mm long; ribs 5, often branching obtusely near distal end. Calyx lobes 5, obtuse, 0.2–0.3 × 0.6–0.7 mm, transparent to translucent, margins entire or fimbriate. Petals 5, elliptical, 0.8–1 × 0.5–0.7 mm, not keeled, thick, white, oil glands prominent on outer surface; margins entire. Disc flat, perpendicular. Stamens 5, antepetalous; filaments terete, 0.4–0.5 mm long; anthers versatile, bilocular; stomia linear, parallel; connective gland compound, elliptical, less than half length of anthers. Style terete, c. 0.25 mm long, stigma slightly capitate. Ovules 6, radially arranged around a small apical placenta. Fruit indehiscent, not enlarged. Seed solitary, broadly ovoid, filling cavity. **Fig. 3 A–D.**

***Selected specimens*: Queensland.** WIDE BAY DISTRICT: near Bingera, Sep 1955, *Cooper* QFD 56/53 (BRI); Alloway area, near Bundaberg, Jun 1965, *Scarth-Johnson* s.n. (BRI); Coonarr Beach, S of Bundaberg, Jul 1983, *Young* 653 (BRI); 26 km SW of Bundaberg along Isis Highway, May 1977, *Telford* 5368 & *Ellyard* (BRI, CANB, MEL, NSW, PERTH); about midway between Childers and Bundaberg, Apr 1945, *Blake* 15515 & *Webb* (BRI, NSW); about 17 miles [27 km] SW of Bundaberg on Childers road, Dec 1939, *Smith* 700 (BRI); Bruce Highway between Elliot and Gregory Rivers, Mar 1969, *Bisset* B91 (BRI); Goodwood, Jun 1915, *Bick* s.n. (BRI); 3 km W of Woodgate, on Goodwood road, May 1971, *Briggs* 4262 & *Johnson* (NSW); Woodgate National Park, Sep 1993, *Forster* PIF 13964 (BRI, CANB, MEL, NSW); Isis Junction, Oct 1912, *Kenny* s.n. (BRI); Isis River, end of Barrett's road, Nov 1992, *Forster* PIF 12314 & *Machin* (BRI, MEL); Burrum Heads road, Sep 1965, *Gittins* 1124 (BRI, CANB, NSW); 16 km from Old Bruce Highway, towards Burrum Heads, Aug 1994, *Bean* 7816 (BRI); Double Island Point, Oct 1946, *Clemens* s.n. (BRI); Wide Bay Military Training Area, Sep 1980, *Adams* 3611 (BRI, CANB); Cooloolah Sandhills, May 1959, *Thorne* 21427 (CANB); 2 km east of Teewah Creek, Cooloola NP, Sep 1993, *Bean* 6454 (BRI, NSW); Noosa R., Cooloola NP, c. 3 km S of Harry Springs Hut, Nov 1984, *Sharpe* 3605 & *Harrold* (BRI). **Cultivated**: The Gap, Brisbane, Oct 1966, *Blake* 22765 (CANB).

***Distribution and habitat*:** *M. littoralis* is distributed in coastal areas of the mainland between Bundaberg and Cooloola National Park (east of Gympie), a total distance of about 170 km (**Map 3**). It inhabits coastal heathland communities known locally as 'wallum', on white sandy soils. Associated species include *Eucalyptus umbra* R.T.Baker, *Melaleuca quinquenervia* (Cav.) S.T.Blake, *Leptospermum semibaccatum* Cheel, and species of *Epacris* and *Banksia.*

***Phenology*:** Flowers and fruits have been collected throughout the year.

***Affinities*:** *M. littoralis* is most closely related to *M. gracilis* but can be distinguished from that by its smaller stature, consistently elliptical petals and the presence of calyx lobes. *M. littoralis* is also close to *M. vernicosa*, but differs from that by its scaly grey bark, dull leaf surface, denticulate leaf margins, longer hypanthia and shorter peduncles.

***Conservation status*:** The risk category for *Micromyrtus littoralis*, according to the criteria of Chalson & Keith (1995), is 'susceptible' (criterion D). Although *M. littoralis* can be locally common, the species is nevertheless rare with only scattered areas of occurrence, with many areas under continued threat from agricultural and urban developments. It is present in Woodgate National Park and Cooloola National Park.

The recommended conservation status for this species as defined by the Queensland *Nature Conservation Act 1992* is 'rare'.

***Etymology*:** The specific epithet *littoralis* is from the Latin meaning 'of the sea shore' and alludes to the fact that it is the only Queensland species of *Micromyrtus* having a coastal distribution.

Micromyrtus vernicosa A.R.Bean **sp. nov.** affinis *Micromyrto capricorniae* sed cortice fibroso brunneo, hypanthio recto costis haud ramosis, petalis minoribus glandes oleosas prominentes ferentibus et disco florali haud obliquo differens. **Typus:** Queensland. WIDE BAY DISTRICT: Mount Walsh National Park, south of Biggenden, 25°34'S 152°03'E, 21 May 1994, *A.R.Bean* 7702 & *P.I.Forster* (holo: BRI; iso: CANB, K, MEL, NSW, PERTH, distribuendi)

Spreading shrub to 2 × 2 m; branchlets somewhat pendulous. Bark brown to orange, weathering

to grey, loose, rather fibrous. Stem flanges grey, convex, not winged, not warty, margins entire. Leaves imbricate, oblanceolate, 1.5–2.5 × 0.5–0.6 mm, concavo-convex, keeled on dorsal surface, glabrous, very glossy, oil glands prominent; apex obtuse; margins entire; petioles c. 0.25 mm long. Flowers 1.9–2.1 mm across, solitary, axillary; peduncles 0.5–1 mm long; bracteoles 2, conduplicate, translucent, c. 0.7 mm long, deciduous. Hypanthium dorsiventrally compressed, obconical, straight, 1.3–1.5 mm long; ribs 5, antesepalous, unbranched or branching very close to the calyx lobes. Calyx lobes 5, semiorbicular, 0.3–0.4 × 0.5–0.6 mm, translucent, margins entire. Petals 5, elliptical, 0.8–1 × 0.6–0.7 mm, not keeled, thick, creamy-white, oil glands prominent on outer surface, margins entire. Disc flat, perpendicular. Stamens 5, antepetalous; filaments terete, c. 0.4 mm long; anthers versatile, bilocular; stomia linear, parallel; connective gland compound, ovoid, c. half length of anthers. Style terete, c. 0.3 mm long; stigma capitate. Ovules 6 or sometimes 7, radially arranged around a small apical placenta. Fruits and seeds not seen. **Fig. 3 E–J**.

Specimens examined: **Queensland**. WIDE BAY DISTRICT: Mount Walsh, near Biggenden, Jun 1983, *Bean* 25 (BRI); rocky gorge base of Biggenden Bluff, May 1931, *White* 7736 (BRI); Mt Walsh, 6.5 km S of Biggenden, 28 May 1977, *Telford* 5312 & *Ellyard* (AD, BRI, CANB, MEL, NSW, PERTH).

Distribution and habitat: *M. vernicosa* is endemic to Mt Walsh near the town of Biggenden in south-east Queensland (**Map 2**). It grows on rocky slopes in heathland. Associated species include *Kunzea flavescens* C.T.White & W.D.Francis, *Leucopogon rupicola* C.T.White and *Grevillea whiteana* McGill.

Phenology: Flowering and fruiting have been recorded for the months of May and June.

Affinities: *M. vernicosa* is closely related to *M. capricornia* and *M. littoralis*. It differs from *M. capricornia* by its brown fibrous bark, smaller petals with oil glands, and hypanthium with unbranched ribs. *M. vernicosa* differs from *M. littoralis* by its brown fibrous bark, glossy leaves and hypanthia, denticulate leaf margins and longer peduncles.

Conservation status: The risk category for *Micromyrtus vernicosa*, according to the criteria of Chalson & Keith (1995), is 'vulnerable' (criterion B1).

The recommended conservation status for this species as defined by the Queensland *Nature Conservation Act 1992* is 'vulnerable'.

Etymology: The specific epithet is derived from the Latin *vernicosus*, meaning 'varnished', in reference to the glossy leaves and hypanthia.

Micromyrtus sessilis J.W.Green, Nuytsia 4(3): 322–4 (1983). **Type:** Queensland. DARLING DOWNS DISTRICT: 2 km S of Miles, 12 October 1977, *J.W.Green* 4675 (holo: BRI; iso: NSW, PERTH).

Spreading shrub to 1.5 × 1.5 m, branchlets not pendulous. Bark brown to orange, loose, fibrous. Stem flanges grey, slightly convex, not winged, not warty; margins entire. Leaves imbricate, obovate to oblanceolate, 1.5–2.6 × 0.7–1.0 mm, concavo-convex, keeled on dorsal surface, glabrous, glossy, oil glands prominent; apex obtuse or acute; margins denticulate; petioles c. 0.2 mm long. Flowers c. 2 mm across, solitary, axillary; peduncles 0–0.3 mm long; bracteoles 2, conduplicate, translucent or opaque, c. 1.5 mm long, persistent. Hypanthium not compressed, obconical, straight, 1.1–1.5 mm long; ribs 5, antesepalous, unbranched or branching very close to the calyx lobes. Calyx lobes 5, semiorbicular, 0.5–0.8 × 0.8–1.1 mm, translucent to transparent, margins ciliate. Petals 5, orbicular to elliptical, 0.8–1.5 × 0.6–1.0 mm, not keeled, thick, creamy-white or tinged with pink, oil glands visible on outer surface; margins entire. Disc flat, perpendicular. Stamens 5, antepetalous; filaments terete, c. 1.0 mm long; anthers versatile, bilocular; stomia linear, subparallel; connective gland simple, globular, less than half length of anthers. Style terete, c. 1.0 mm long; stigma capitate. Ovules 4, radially arranged around a small apical placenta. Fruits scarcely enlarged. Seeds solitary, ovoid, filling cavity.

Selected specimens: **Queensland**. BURNETT DISTRICT: Glencoe, 13 miles [21 km] ESE of Camboon, Sep 1969, *Pedley* 2885 (BRI). MARANOA DISTRICT: 35 miles [56 km] SW of Roma, Sep 1967, *Pedley* 2411 (BRI, CANB, NSW); Yuleba-Jackson road, 5 miles [8 km] west of Yuleba, Nov 1958, *Johnson* 683 (BRI); Combidiban Creek, east of Yuleba, Aug 1978, *Williams* 78107 (BRI). DARLING DOWNS

DISTRICT: Miles-Condamine road, 5 km S of Miles, Aug 1977, *Williams* 77181 (BRI); Gurulmundi, Sep 1994, *Sparshott* KMS315 & *Sparshott* (BRI, MEL, NSW); Barakula State Forest, Aug 1971, *Nielsen* 9 (BRI); just south of Castle Rock, Girraween NP, Sep 1993, *Bean* 6346 (BRI).

Distribution and habitat: *M. sessilis* is widespread in southern Queensland from west of Eidsvold to Girraween National Park (**Map 1**). It also occurs in New South Wales as far south as Griffith. It grows in heathland or low eucalypt woodland, on shallow sandy soils. Associated species include *Eucalyptus deanei* Maiden, *E. exserta* F.Muell., *E. prava* L.A.S.Johnson & K.D.Hill, *Acacia triptera* Benth., *Melichrus urceolatus* R.Br. and *Calytrix tetragona* Labill.

Phenology: Flowers and fruits have been recorded for most months of the year but with greatest frequency in the period August-September.

Affinities: *M. sessilis* is closely related to *M. striata* but differs from that by its 5-ribbed hypanthium (7–9 ribbed for *M. striata*).

Conservation status: A widespread and moderately common species.

Micromyrtus striata J.W.Green, Nuytsia 4(3): 324–7 (1983). **Type:** New South Wales. SOUTH WESTERN PLAINS: 5.5 miles [8.8km] S of Tottenham, 7 September 1962, *T. & S. Whaite* 2525 (holo: NSW).

Spreading shrub to 1.2 × 1.2 m; branchlets not pendulous. Bark brown to orange, loose, fibrous. Stem flanges grey, slightly convex, not winged, not warty; margins entire. Leaves imbricate, obovate to oblanceolate, 1.2–2.6 × 0.7–1.2 mm, concavo-convex, keeled on dorsal surface, glabrous, glossy, oil glands prominent; apex obtuse or acute; margins denticulate; petioles absent or c. 0.2 mm long. Flowers c. 2 mm across, solitary, axillary; peduncles 0–0.3 mm long; bracteoles 2, conduplicate, translucent or opaque, c. 1.2 mm long, persistent. Hypanthium not compressed, obconical, straight, 1.2–1.6 mm long; ribs 7–9, unbranched or joining close to base of hypanthium. Calyx lobes 5, semiorbicular, 0.5–0.8 × 0.8–1.1 mm, translucent to transparent, margins ciliate. Petals 5, orbicular to elliptical, 0.8–1.7 × 0.6–1.3 mm, not keeled, thick, creamy-white or tinged with pink, oil glands visible on outer surface; margins entire. Disc flat, oblique or perpendicular. Stamens 5, antepetalous; filaments terete, c. 1.0 mm long; anthers versatile, bilocular; stomia linear, subparallel; connective gland simple, globular, less than half length of anthers. Style terete, c. 1.0 mm long; stigma capitate. Ovules 4, radially arranged around a small apical placenta. Fruits scarcely enlarged. Seeds solitary, ovoid, filling cavity.

Specimens examined: **Queensland**. DARLING DOWNS DISTRICT: Wondul Range, SF 1898, NW of Inglewood, Aug 1993, *Bean* 6335 & *Forster* (BRI, DNA); Headwaters of Pariagara Creek, 7 km W of Bringalily Forestry lookout tower, Sep 1992, *Forster* PIF 11662 & *Machin* (BRI, CANB, DNA, K, MEL, NSW, PERTH).

Distribution and habitat: *M. striata* is widespread in central New South Wales from north of Bourke to Griffith. In Queensland, it is apparently confined to the Inglewood area (**Map 3**). It grows in mallee, heathland or woodland on shallow sandy soils in association with such species as *Eucalyptus exserta* and *Callitris endlicheri* (Parl.) F.M.Bailey.

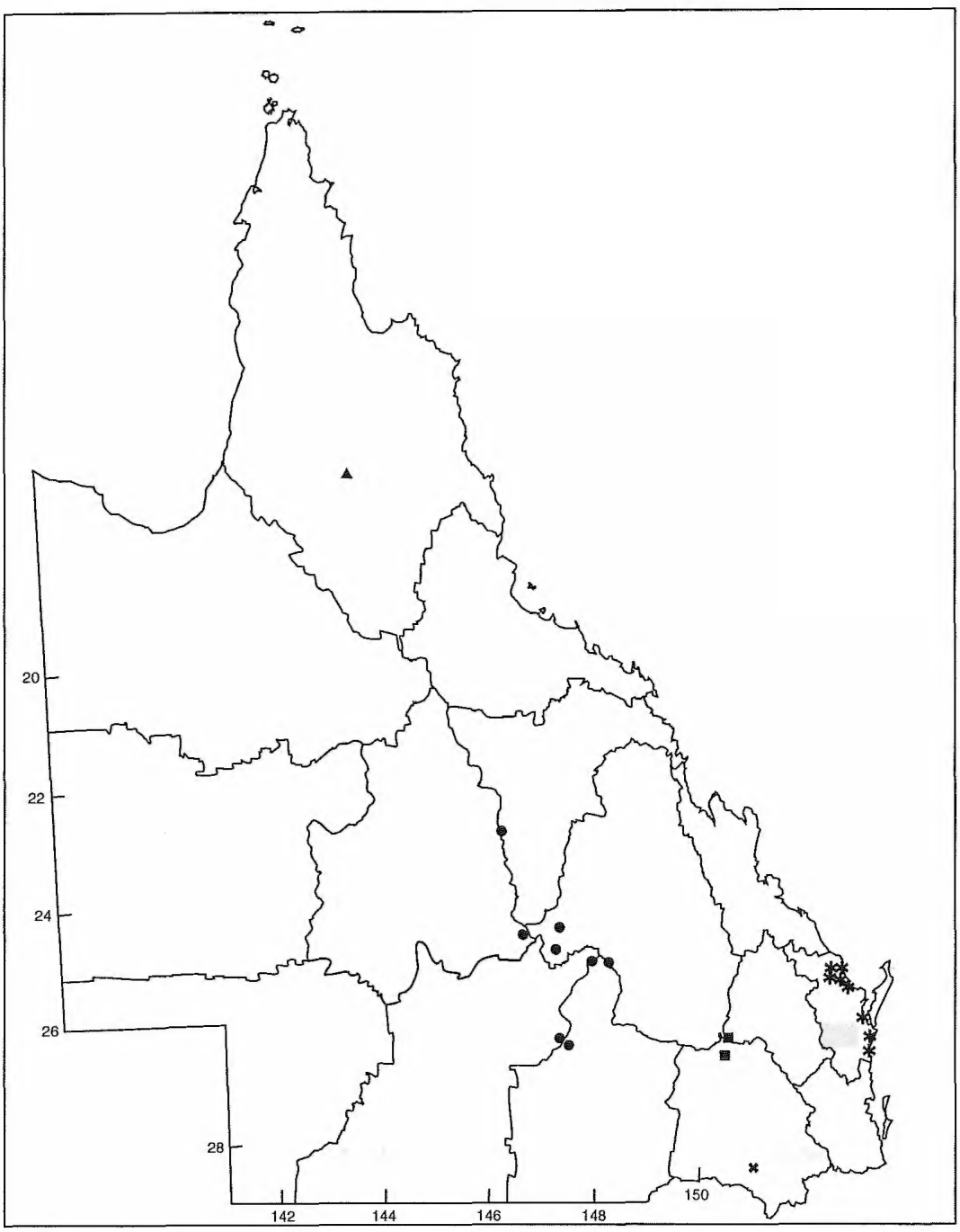
Phenology: Flowering or fruiting specimens have been collected in August and September.

Note: These specimens represent the first record of this species for Queensland.

Affinities: *M. striata* is very closely related to *M. sessilis* and can be reliably distinguished only by the ribbing of the floral hypanthium. *M. striata* has a 7- or 9-ribbed hypanthium, while the hypanthium of *M. sessilis* is 5-ribbed.

Conservation status: A widespread and reasonably common species.

Micromyrtus forsteri A.R.Bean **sp. nov.** affinis *Micromyrto fimbrisepalae* sed hypanthio breviore costas 7–10 ferente, lobis calycis semiorbicularibus minoribus, petalis minoribus et filamentis fere teretibus differens. **Typus:** Queensland. COOK DISTRICT: 87 km along Bulimba Station road, off the Chillagoe to Wrotham Park road, 16°54'S, 143°36'E, 05 February 1994, *P.I.Forster* PIF14741 (holo: BRI



Map 3. Distribution of *Micromyrtus* spp. ■ *M. albicans*, ▲ *M. forsteri*, ● *M. leptocalyx*, ✱ *M. littoralis*, ✖ *M. striata*.

(3 sheets + spirit); iso: A, AD, BISH, CANB, DNA, K, L, MEL, NSW, P, QRS, distribuendi).

Shrub to 2.5 m high; branchlets erect or spreading. Bark grey, closely adhering, except at base, where loose and fibrous. Stem flanges grey, convex, not winged, not warty; margins entire. Leaves imbricate, ovate, 1.0–1.5 × 0.5–0.7 mm, plano-convex or concavo-convex, not keeled on dorsal surface, glabrous, oil glands numerous, evenly scattered; apex obtuse; margins denticulate; petioles absent. Flowers 4–4.5 mm across, solitary, axillary; peduncles short, thick, up to 0.5 mm long; bracteoles 2, conduplicate, acute, c. 0.8–1 × 0.5 mm, deciduous. Hypanthium obconical, not compressed, straight, 1.0–1.5 mm long; tube 7- or 8-ribbed at base, some ribs dividing distally; 10 ribbed at top opposite the petals and calyx lobes, antepetalous ribs extending onto petals. Calyx lobes 5, semiorbicular, 0.5–0.7 × 0.8–1.1 mm, translucent or transparent, margins fimbriate. Petals 5, orbicular, 1.4–1.5 × 1.2–1.5 mm, not keeled, thin, white to yellow, oil glands visible on outer surface; margins fimbriate. Disc flat, perpendicular. Stamens 10, opposite the petals and calyx lobes; filaments slightly flattened, tapering, c. 1 mm long; anthers versatile, bilocular, stomia linear, parallel; connective gland globular, simple, less than half length of anther. Style terete, somewhat tapering, 0.8–1 mm long, stigma capitate. Ovules 6–7, radially arranged around a small apical placenta. Fruit indehiscent, scarcely enlarged. Seed solitary, ovoid to spherical, filling the cavity. **Fig. 3 K–N.**

Specimen examined: **Queensland.** Cook District: 87 km from Chillagoe-Wrotham Park road, towards 'Bulimba', Jan 1993, *Bean* 5664 & *Forster* (BRI); North Head, 18°46'S, 143°19'E, Apr 1996, *Forster* PIF19027 & *Ryan* (BRI, DNA, MEL, QRS).

***Distribution and habitat*:** *M. forsteri* is known from only two localities, both in north Queensland (**Map 3**). It grows in open rocky areas associated with species such as *Acacia shirleyi*, *Acacia multisiliqua* (Benth.) Maconochie and *Myrtella retusa* (Endl.) A.J.Scott.

***Phenology*:** Flowers and fruits have been recorded in January, February and April.

***Notes*:** At 16°54'S latitude, the type locality of *M. forsteri* is the most northerly known occurrence for the genus *Micromyrtus*. Furthermore, *M. forsteri* and *M. delicata* are the only species known to occur north of 20°S latitude.

M. forsteri is the only *Micromyrtus* species from the eastern states of Australia to have flowers with 10 stamens.

Affinities: *M. forsteri* is closely related to *M. hymenonema* and *M. fimbrisepala*, as all three have flowers which possess 10 stamens and 6–7 ovules. However, *M. forsteri* differs from the others by its 7- 10-ribbed hypanthium (vs. 5-ribbed), smaller calyx lobes and petals, and the only slightly flattened filaments (vs. conspicuously lorate). *M. hexamera* is also related to *M. forsteri*, but *M. hexamera* has 6 petals and calyx lobes, and 12 stamens.

***Conservation status*:** The risk category for *Micromyrtus forsteri*, according to the criteria of Chalson & Keith (1995) is 'priority for investigation' (criterion A). The known populations comprise a few hundred plants over an area of several hectares. However, the area is poorly explored botanically and it seems likely that more stands will be found.

The recommended conservation status for this species as defined by the Queensland *Nature Conservation Act 1992* is 'rare'.

***Etymology*:** The species is named for Paul Irwin Forster, collector of the type specimen and prolific collector of, and publisher on the Queensland flora.

Micromyrtus hexamera (Maiden & Betche) Maiden & Betche, Census N.S.W. pl. 157 (1916); *Thryptomene hexamera* Maiden & Betche, Proc. Linn. Soc. New South Wales 26: 82 (1901). **Type:** New South Wales. North Western Plains: Road from Bourke to Goombalie, Warrego River, Sep 1900, *E.Betche* s.n. (lecto: NSW; isolecto: MEL), fide Green (1980b).

Illustration: A. Clemson, *Honey & Pollen Flora* p. 121 (1985), as *M. ciliata*.

Shrub to 2 m high; branchlets arching. Bark brown to orange, loose, rather fibrous. Stem

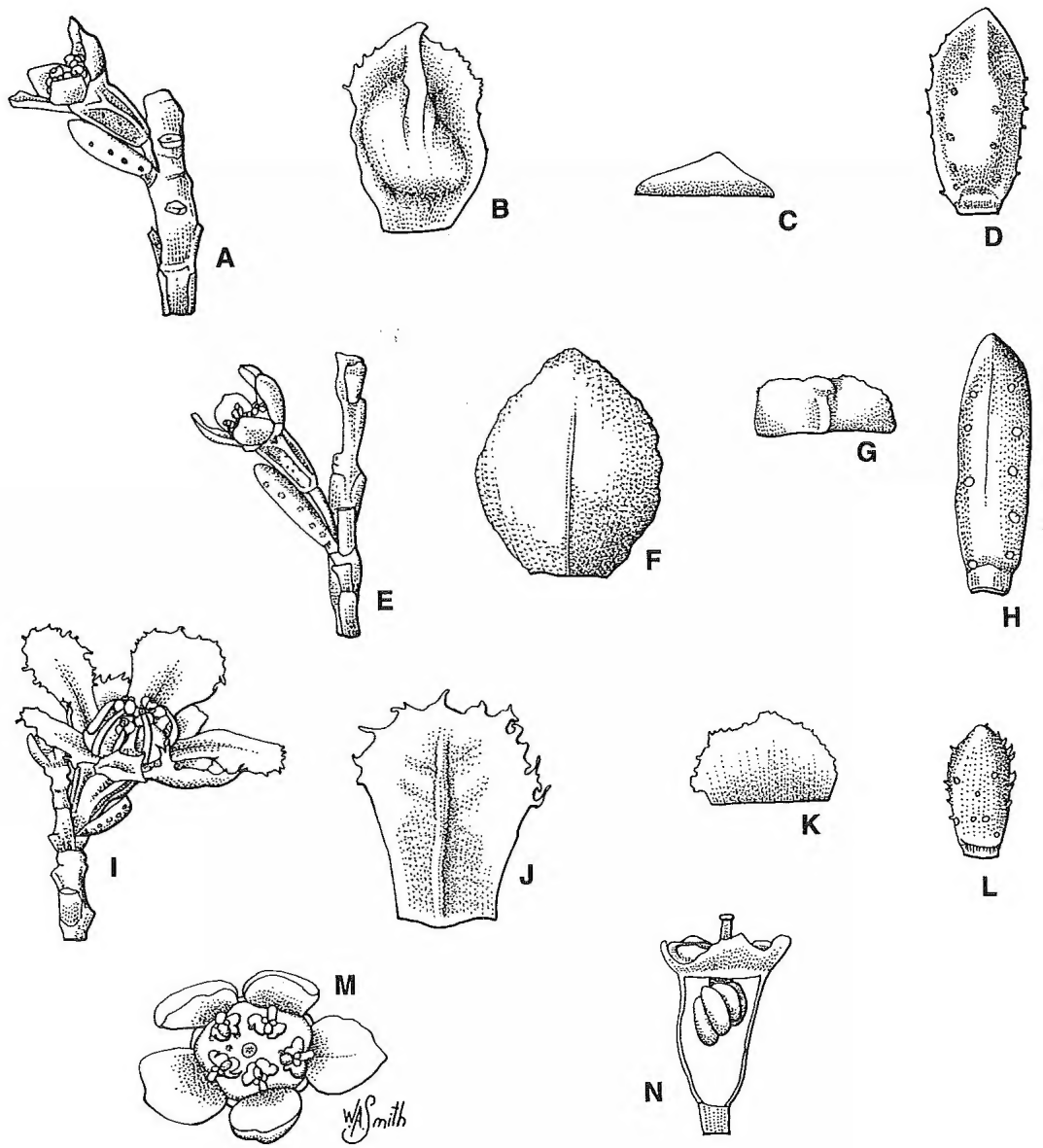


Fig. 3. A–D: *Micromyrtus littoralis*. A. flower × 8. B. abaxial surface of petal × 32. C. hypanthium lobe × 32. D. abaxial surface of leaf × 16. E–H: *M. vernicosa*. E. flower × 8. F. abaxial surface of petal × 32. G. hypanthium lobe × 32. H. abaxial surface of leaf × 16. I-L: *M. forsteri*. I. flower × 8. J. abaxial surface of petal × 16. K. hypanthium lobe × 16. L. abaxial surface of leaf x 16. General characteristics of *Micromyrtus*. M. Stamens and petals from above x 16. N. Ovule arrangement x 16. A–D, Bean 7816; E–H, M, N Bean 7702 & Forster; I-L, Forster 14741.

flanges grey, flat, not warty, not winged, margins entire. Leaves not or scarcely imbricate, obovate, 1.1–1.9 × 0.8–1.0 mm, concavo-convex, not keeled on dorsal surface, glabrous, oil glands few, prominent, evenly scattered; apex obtuse; margins entire or denticulate; petioles absent or up to 0.2 mm long. Flowers 5–6 mm across, solitary, axillary; peduncles 0.7–1.2 mm long; bracteoles 2, conduplicate, acute, c. 1.0 × 0.3 mm, deciduous. Hypanthium obconical, not compressed, straight, 1.7–2.0 mm long; tube 6-ribbed at base, some ribs dividing distally. Calyx lobes 6, semiorbicular, 0.6–0.7 × 1.0–1.1 mm, translucent or transparent, margins fimbriate. Petals 6, orbicular, 1.7–2.1 × 1.7–2.1 mm, not keeled, thin, white, oil glands absent; margins fimbriate. Disc flat, perpendicular or oblique. Stamens 12, opposite the petals and calyx lobes; filaments slightly flattened, tapering, c. 1.0 mm long; anthers versatile, bilocular, stomia linear, parallel; connective gland ellipsoidal, compound, diameter c. 0.75 times length of anther. Style terete, c. 1.0 mm long, stigma capitate. Ovules 7–8, radially arranged around a small apical placenta. Fruit indehiscent, scarcely enlarged. Seed solitary, ovoid to spherical, filling the cavity.

***Specimens examined*: Queensland.** WARREGO DISTRICT: north-western section of Chesterton Range NP, Sep 1995, *Bean* 8996 & *Grimshaw* (BRI); east of Wyandra toward Elverston station, Sep 1963, *Cockburn* 22 (BRI); near Alpha station, 27°1–' S, 146°0–' E, Jun 1955, *Smith* 6414 (BRI); 48 km W of Cunnamulla, Nov 1954, *Smith* 6004 (BRI); N of Balonne Highway on Linden road, 8 km N of road junction, Aug 1978, *Williams* 78231 (AD, BRI, MO); Cunnamulla Bollon road, 32 km E of Bourke turnoff, Apr 1962, Gordon DMG4762 (BRI); Cunnamulla, Jul 1949, *Gordon* DMG36 (BRI); Gilruth Plains, Apr 1963, *McKee* 10346 (BRI). MARANOA DISTRICT: 78 km W of Bollon, on road to Cunnamulla, Sep 1988, *Thomas* s.n. (BRI, NSW); Boatman road, 84 miles [135 km] SE of Charleville, Sep 1968, *Williams* 72 (BRI); c. 70 km W of Bollon, Sep 1973, *Henderson* H2014 & *Boyland* (BRI); on Balonne Hwy, 75 km W of Bollon, Aug 1981, *Whaite* 3821 & *Whaite* (BRI); 62 km SE of Charleville along Boatman road, Mar 1976, *Purdie* & *Boyland* 98 (BRI); Dingwall, c. 97 miles SSE of Charleville, Aug 1963, *Everist* 7502 (BRI).

***Distribution and habitat*:** *M. hexamera* is distributed in the Cunnamulla and Charleville areas in Queensland (**Map 1**). It also occurs near Bourke in northern New South Wales. It grows in heathland or *Acacia* shrubland communities on red or yellow sandy loam. Associated species include *Acacia aneura* Benth., *Eremophila gilesii* F.Muell., *Eucalyptus melanophloia* F.Muell. and *Triodia* sp.

***Phenology*:** Flowering has been recorded for most months of the year with an apparent peak around August and September.

***Affinities*:** *M. hexamera* is related to *M. forsteri* but differs from that by its hexamerous flowers with 12 stamens (10 stamens for *M. forsteri*), hypanthia which are 6-ribbed near their bases (7–8-ribbed for *M. forsteri*), and petals 1.7–2.1 mm long (1.4–1.5 mm for M. forsteri).

***Conservation status*:** This is a relatively common species within its range, and no conservation coding is considered necessary at this time.

***Note*:** L.S.Smith collected a specimen of *Micromyrtus hexamera* from 'near Alpha station' in 1955. Smith did not indicate the latitude or longitude of the collection or any other locational data. When the Queensland Herbarium began databasing label records in the 1970s, technical staff were required to allocate approximate latitude and longitude data to vague localities. In the case of L.S.Smith 6414, it was assumed that the Alpha station involved was the one south of the town of Alpha, in the South Kennedy pastoral district. The distribution map of Green (1980b) reported this in good faith, with the Alpha site shown as a quite remote northern outlier.

Examination of specimens collected by Smith during the same week as the one in question reveal that he was in the Charleville-Cunnamulla area at the time, and that the Alpha station on which Smith in fact collected was and is located near Wyandra, between Charleville and Cunnamulla. *M. hexamera* is well known in areas around these towns. With the removal of the anomalous South Kennedy record, it can be stated that, in Queensland, the species is confined to the Warrego and Maranoa pastoral districts.

Acknowledgements

Paul Forster has contributed greatly to this project by facilitating my field work, and undertaking to collect specimens for me, at times a long way from his intended route. I also thank John Thompson for his collections and enthusiasm, Will Smith for the illustrations and

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References

BENTHAM, G. (1865). In Bentham & Hooker, *Genera Plantarum* p. 700. London: Lovell Reeve & Co.

—— (1867). *Micromyrtus*. In *Flora Australiensis* 3: 63–6. London: Lovell Reeve & Co.

CHALSON, J.M. & KEITH, D.A. (1995). A Risk Assessment Scheme for Vascular Plants: Pilot Application to the Flora of New South Wales. Hurstville: National Parks and Wildlife Service.

GREEN, J.W. (1980a). A Revised Terminology for the Spore-containing Parts of Anthers. *New Phytologist* 84: 401–6.

—— (1980b). *Thryptomene* and *Micromyrtus* (Myrtaceae) in Arid and Semi-arid Australia. *Nuytsia* 3(2): 183–209.

——(1983). Taxonomy of *Micromyrtus ciliata* (Myrtaceae) and allied species including three new species of *Micromyrtus* from eastern Australia and lectotypification of *M. minutiflora*. *Nuytsia* 4(3): 317–31.

HANDO, V. (1988). Plants of Western Darling Downs, Barakula-Gurulmundi and South-west Burnett. pp. 96–171. In R. Hando (ed.), *Going Bush with Chinchilla Nats*. Chinchilla: Chinchilla Field Naturalists Club Inc.